



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,116	04/09/2001	Abdallah Lyoussi	33126	5138

7590 08/13/2002

Pearne Gordon McCoy & Granger
Suite 1200
526 Superior Avenue East
Cleveland, OH 44114-1484

EXAMINER

PALABRICA, RICARDO J

ART UNIT	PAPER NUMBER
----------	--------------

3641

DATE MAILED: 08/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,116

Applicant(s)

LYOUSSI ET AL.

Examiner

Rick Palabrica

Art Unit

3641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's election without traverse of Invention II, and species A and E (claims 4-10) in Paper No. 10 is acknowledged.

Specification

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, i.e., failing to provide an enabling disclosure.

The claimed invention is a process and device for analysis of radioactive objects. However, there is no adequate or enabling disclosure of how such could be accomplished using the applicant's invention.

Throughout the disclosure, the applicant refers to the object to be analyzed as including a "radioactive waste package." On pages 10 and 11 of the specification, he provides equations that allow determination of masses of isotopes supposedly

Art Unit: 3641

contained in a waste package, said determination using the results of neutron counting.

On page 10, line 16+, he states, "it is assumed that the package contains residual uranium 235, uranium 238, plutonium 239 and plutonium 241." Based on these radioisotopes, the applicant's waste package may include high-level radioactive waste from nuclear power generation. Such high-level waste inherently include radioisotopes, in addition to those ones cited by the applicant, that either emit neutrons by spontaneous fission or cause neutron emissions by the charged particles they emit. These other radioisotopes include ^{240}Pu , ^{244}Cm and ^{257}Cf . There is neither an adequate description nor enabling disclosure as to how and in what manner the neutron signal interference due to these other neutron-emitting radioisotopes are taken into consideration in the method. Said interference could result, for example, from neutron emissions from these other radioisotopes that occur simultaneously with the delayed neutron emissions from the radioisotopes cited by the applicant.

In the equations cited by the applicant on pages 10 and 11, correlation factors, R_1 and R_2 , and calibration coefficients, a_i and b_i , are disclosed. The disclosure is insufficient as to how exactly said factors and coefficients are determined. Again, the disclosure recites said factors and coefficients based on the 4 radioisotopes cited by the applicant. The disclosure is insufficient as to how exactly are the other inherently present, interfering radioisotopes are considered, and what exactly are their effects in the equations cited.

On page 11, the applicant discloses that the waste package may be interrogated by a pulsed generator of 14 MeV neutrons. The disclosure is insufficient as to what exactly is the required pulse rate and pulse duration.

On page 12, lines 26+, the applicant discloses the use of signal processing means 6 to process the neutron signals. The disclosure is insufficient as to what exactly are the elements of this processing means and how exactly they function as an integrated system.

On page 13, lines 11+, the applicant discloses a containment for deploying the waste package, neutron generator and neutron detectors, said containment being comprised of different parts that are made from different materials. The disclosure is insufficient as to what exactly are the dimensions of the different parts of the containment in relation to the size of the waste package, and the dimensions of said different parts relative to each other.

On page 15, lines 1+, the applicant discloses a mean for rotating the waste package in the containment. The disclosure is insufficient as what exactly must be the rotational speed requirements for the package.

On page 15, last paragraph, continuing to the next page, the applicant discloses that lead elements 22 and 24 can increase the intensity of the neutron flux by about 60%. There is neither an adequate description nor enabling disclosure as to how and in what manner said increase in intensity is so obtained. For example, what exactly should be the thickness and length of each lead sheet to achieve the 60% increase, etc.

Art Unit: 3641

The disclosure is insufficient as to what exactly is the range of the total activity of the waste package that can be assayed using the claimed invention.

There is neither an adequate description nor enabling disclosure as to how and in what manner the neutron source can be placed "on the fourth side of the containment", as per claim 6, line 4, and at the same time be located "in a space 20 in the wall 14", as per the specification on page 13, lines 22+, and Fig. 3 of the drawings.

The disclosure is insufficient in failing to set forth, operative embodiments or examples of the invention, including parameters, such as, neutron generator pulse rate, relative dimensions of the containment parts with respect to the waste package and with respect to each other, range of total activity of the waste package that can be assayed, package rotator speed requirements, etc. Examples and description should be of sufficient scope as to justify the scope of the claims. See MPEP 608.01(p).

It is thus considered that the examiner (for the reasons given above) has set forth a reasonable and sufficient basis for challenging the adequacy of the disclosure. The statute requires the application itself to inform, not to direct others to find out for themselves; *In re Gardner et al.*, 166 USPQ 138, *In re Scarborough*, 182 USPQ 298. Note that the disclosure must enable a person skilled in the art to practice the invention without having to design structure not shown to be readily available in the art, *In re Hirsch*, 131 USPQ 198.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 4-10 are rejected under 35 U.S.C. 101 because the claimed invention as disclosed is inoperative and therefore lacks utility.

The reasons the invention as disclosed is inoperative are the same as the reasons set forth in section 3 above as to why the disclosure is objected to, and said reasons are incorporated herein.

Claim Rejections - 35 USC § 112

4. Claims 4-10 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the objection to the specification in section 2 above.

5. Claims 4-10 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "particularly a radioactive waste package" in line 1. The term "particularly" is a preference term that can lead to confusion over the scope of

Art Unit: 3641

the claim, and accordingly renders the claim vague and indefinite, and the metes and bounds thereof are undefined. See MPEP 2173.05(d).

Claim 6 recites the limitation "multiplier material" in line 6. This term is indefinite because it does not define what is being "multiplied."

Claim 9 recites the limitation "the corresponding thickness" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by any one of Kinninger et al. (U.S. 3,796,876), Untermeyer (U.S. 3,786,256), Einfeld (U.S. 3,222,521), Caldwell et al. (U.S. 4,483,816), hereinafter referred to as Caldwell-1, or Caldwell et al. (U.S. 4,497,768), hereinafter referred to as Caldwell-2.

Anyone of the above five (5) references discloses a device for analyzing an object comprising: 1) means of irradiating a neutron flux consisting of thermal, epithermal and fast neutrons; 2) means of counting neutrons; and 3) means of processing neutron signals. Anyone of them also discloses the neutron flux being

Art Unit: 3641

generated by a fast neutron source in a pulse mode, and a means for thermalizing these fast neutrons.

As to the following clauses in claim 4: 1) lines 6-8, starting with the word "resulting" and ending with the word "material"; 2) lines 9-10, starting with the word "designed" and ending with the word "pulse"; 3) lines 11-18, starting with the word "designed" and ending with the word "calibration", these are essentially method limitations or statements of intended or desired use. Therefore, these clauses, as well as other statements of intended use do not serve to patentably distinguish the claimed structure over that of any one of the references cited. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 152 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See also MPEP 2114 that states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647.

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531.

Apparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caldwell-1 in view of Chien et al. (U.S. 4,148,687). Caldwell-1 discloses applicant's claims except for the location of the neutron source on a fourth side of the containment and the use of a neutron multiplier material.

As indicated above, Caldwell-1 discloses the claims 4 and 5 from which claims 6-10 depend.

As to claim 6, Caldwell-1 discloses a containment that includes a central area in which the object to be assayed is placed (see Fig. 1). At least three sides are delimited by a thickness of moderator material, i.e., graphite and polyethylene. Neutron counting means (helium-3 detectors) are placed on all sides between the central area and the thickness of moderator material. These detectors are surrounded by a thickness of neutron absorber (cadmium) and moderator material (polyethylene). There is also a waste package rotator to make the neutron irradiation uniform.

Caldwell-1 discloses that the neutron generator source is placed in the cavity of the containment. However, Caldwell-2 teaches a neutron source (4) for assaying waste samples that is disposed on a wall of the irradiating chamber (see Fig. 1).

Cladwell-1 also does not disclose the use of a neutron multiplier. However, Chien et al. teach the use of beryllium as a fast neutron multiplier to increase the neutron flux and thereby reduce the enrichment requirement of fuel for a light water reactor. One having ordinary skill in the art would have recognized the advantage of using a neutron multiplier to increase the yield of neutrons from a fast neutron source, and to use such multiplier in an assay apparatus using a neutron generator would have been prima facie obvious.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Caldwell-1 by the teachings of Caldwell-2 and Chien et al., in order to have a neutron source placed on a fourth side of the containment, and have a thickness of neutron multiplier material between the central area and the neutron source, and between the central area and the neutron counting means, to gain the advantages of neutron multiplicity, because such modification is no more than the use of conventional designs/techniques within the nuclear art, and the substitution of one configuration of the neutron source location by another well-known configuration.

Art Unit: 3641

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References D-G further illustrate prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 703-306-5756. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 703-306-4198. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

RJP
August 2, 2002


MICHAEL J. CARONE
SUPERVISORY PATENT EXAMINER